SPECIFICATION AMENDMENTS

Amend the Summary of the Invention section as follows:

To solve the above-described problems, it is a first object of the present invention to provide a disc~~-type~~ eccentric rotor which appropriately generates vibrations by ~~means of a~~ centrifugal force with high efficiency and can be easily installed, and a flat~~-type~~ vibrator motor using the same.

It is a second object of the present invention to provide a disc~~-type~~ eccentric rotor which does not need an eccentric member by arranging the center of gravity of the rotor to be eccentric by using the coils themselves.

It is a third object of the present invention to provide a flat~~-type~~ vibrator motor which uses the above flat, disc~~-type~~ eccentric rotor so that high efficiency is achieved, the number of parts is reduced, and manufacturing cost is lowered.

It is a fourth object of the present invention to ~~obtain~~ produce vibrations by using a difference in centrifugal forces, which is achieved by arranging a metal member having a high specific gravity at a portion where no wound~~-type~~ air-core coils exist.

To achieve the ~~above~~ foregoing objects, ~~as disclosed in claim 1,~~ a first disc~~-type~~ eccentric rotor having two or more air-core coils and generating a difference in centrifugal forces by the rotation of the rotor itself, is provided, the rotor comprising a flat~~-type~~ commutator member having a shaft insertion through hole in the center thereof, a plurality of commutator land segments formed around the shaft insertion through hole on a first side of the flat~~-type~~ commutator member, wound~~-type~~ air-core coil arrangement guides ~~formed~~ outside the shaft insertion through hole on a second side of the flat~~-type~~ commutator member, air-core coil end portion connection lands ~~formed~~ circumferentially on the second side of the flat~~-type~~ commutator member, a shaft holder installed around the shaft insertion through hole on the second side of the flat~~-type~~ commutator member, and wound~~-type~~ air-core coils installed at the wound~~-type~~ air-core coil arrangement guides and having the end portions ~~thereof~~ connected to the air-core coil end portion connection lands.

In the ~~above~~ rotor, ~~as disclosed in claim 2,~~ the air-core coils are radially arranged at a predetermined angle and at least one air-core coil is ~~formed as~~ a printed wiring~~-type~~ air-core coil.

Further, ~~as disclosed in claim 3,~~ the air-core coils comprise one printed wiring~~-type~~ air-core coil and two wound~~-type~~ air-core coils, and the air-core coils are arranged so as not to overlap one another. Otherwise, ~~as disclosed in claim 4,~~ the air-core coils comprise two

printed wiring-~~type~~ air-core coils and one wound-~~type~~ air-core coil, and the air-core coils are arranged so as not to overlap one another.

~~As disclosed in claim 5, it~~It is preferable that the wound-~~type~~ air-core coil arrangement guide apertures and reinforcement holes are-~~formed~~ on the printed wiring-~~type~~ commutator member, and the reinforcement holes and the wound-~~type~~ air-core coil arrangement guide apertures are respectively connected through grooves.

Moreover,~~as disclosed in claim 6,~~ it is preferable that the shaft holder and the wound ~~type~~-air-core coil arrangement guides are integrally formed of the same resin by outsert molding on the flat-~~type~~ commutator member.

As another way to achieve the-~~above~~ foregoing objects,~~as disclosed in claim 7,~~ a second disc ~~type~~-eccentric rotor having one or more wound-~~type~~ air-core coils and generating a difference in centrifugal forces by the rotation of the rotor itself, is provided, the rotor comprising a flat ~~type~~-commutator member having a shaft insertion through hole in the center thereof, a plurality of commutator land segments formed around the shaft insertion through hole on a first side of the flat-~~type~~ commutator member, a shaft holder installed around the shaft insertion through hole on a second side of the flat-~~type~~ commutator member, wound ~~type~~ air-core coil end portion connection lands formed circumferentially on the second side of the flat ~~type~~-commutator member, at least one wound-~~type~~ air-core coil installed outside the shaft holder on the second side of the flat-~~type~~ commutator member and having the end portions thereof connected to the wound-~~type~~ air-core coil end portion connection lands, and an eccentric weight formed of tungsten alloy-~~to be~~ installed within the thickness of the wound ~~type~~-air-core coil on the second side of the flat-~~type~~ commutator member, the weight being fixed to the flat-~~type~~ commutator member by-~~means of~~ resin.

Further,~~as disclosed in claim 8,~~ in the second disk-~~type~~ eccentric rotor, at least one printed wiring-~~type~~ coil is-~~formed~~ at a position of the flat-~~type~~ commutator member where the eccentric weight is installed.

As yet another way to achieve the-~~above~~ foregoing objects,~~as disclosed in claim 9,~~ there is provided a flat-~~type~~ vibrator motor having the eccentric rotor as described above. Here, the flat-~~type~~ vibrator motor comprises a disc-~~type~~ eccentric rotor having at least one air-core coil and generating a difference in centrifugal forces by the rotation of the rotor itself, a shaft for supporting the eccentric rotor, a magnet for providing a magnetic field for the rotor via a gap therebetween in an axial direction, a brush arranged inside the magnet for providing electric power to the air-core coil through the flat-~~type~~ commutator member, and a housing accommodating all the-~~above~~ elements described above.

In the ~~above~~ flat ~~type~~ vibrator motor, ~~as disclosed in claim 10,~~ the shaft is fixed at one side of the housing and a member for preventing the eccentric rotor from moving in a radial direction is installed at the other side of the housing.

~~With reference to claim 1, since~~Since the rotor is of a disc ~~type~~, the size of each air-core coil can be set such that the effective conductive portions can be positioned within an open angle of two adjacent magnetic poles. Therefore, the maximum vibrations are generated so as to secure high efficiency. The open angle of two adjacent magnetic poles are called "standard electric open angle." The connection of the coil end portions can be easily performed. Also, the disc rotor ~~of a disc type~~ can be ~~formed to be~~ eccentric.

~~With reference to claim 2, the~~The rotor is not arranged to be inclined toward the side. The size of each air-core coil can be set such that the effective conductive portions can be positioned within the standard electric open angle. Also, since the eccentricity due to the difference in weight between the printed wiring ~~type~~ air-core coil and the wound ~~type~~ air-core coil can be anticipated, a disc ~~type~~ rotor which can easily generate vibrations ~~by means of~~ due to the difference in the centrifugal forces during rotation is possible.

~~With reference to claims 3 and 4, since~~Since the eccentricity due to the difference in weight between the printed wiring ~~type~~ air-core coil and the wound ~~type~~ air-core coil can be anticipated, a disc ~~type~~ rotor which can easily generate vibrations ~~by means of~~ due to a difference in the centrifugal forces during rotation is possible. Also, since one or two wound ~~type~~ air-core coils suffice, the manufacturing cost can be reduced.

~~With reference to claim 5, when~~When the shaft holder and the wound ~~type~~ air-core coil arrangement guides are erected by outsert molding on the wound ~~type~~ air-core coil arrangement guide apertures and the reinforcement holes, resin fills the insertion pass portion so that the wound ~~type~~ air-core coil arrangement guides, the stop walls, and the shaft holder are integrally connected, which improves strength ~~thereof~~.

~~With reference to claim 6, the~~The shaft holder and the wound ~~type~~ air-core coil arrangement guides can be formed ~~at once~~ simultaneously.

~~With reference to claims 7 and 8, a~~A disc ~~type~~ rotor according to the invention can generate ~~great~~ large vibrations due to high specific gravity of tungsten alloy. Since fewer air-core coils are required, the manufacturing cost is reduced.

~~With reference to claims 9 and 10, since~~Since the vibrator motor has the above-described rotor, the manufacturing cost is reduced while ~~a great amount of~~ large vibrations can be obtained.

Replace the paragraph beginning at page 10, line 9 with:

As described above, in the disc~~-type~~ eccentric rotor having the above structure according to the present invention, vibrations due to a centrifugal force are appropriately generated and the air-core coils are~~-formed to be great~~ large and uniformly arranged, so that high efficiency can be obtained. Also, since one or two wound~~-type~~ air-core coils suffice, installation and line connection can be easily performed.

Replace the paragraph beginning at page 10, line 14 with:

~~With reference to claim 1, since~~Since the flat~~-type~~ commutator member is a disc~~-type~~, the size of each air-core coil can be set such that the effective conductive portions can be positioned within an open angle of two adjacent magnetic poles. The connection of the coil end portion can be easily performed. Also, the disc rotor~~-of a disc type~~ can be~~-formed to be~~ eccentric.

Replace the paragraph beginning at page 10, line 19 with:

~~With reference to claim 2, the~~The rotor is not arranged to be inclined toward the side. The size of each air-core coil can be set such that the effective conductive portions can be positioned within the standard electric open angle. Also, since the eccentricity due to the difference in weight between the printed wiring~~-type~~ air-core coil and the wound~~-type~~ air-core coil can be anticipated, a disc~~-type~~ rotor which can easily generate vibrations by~~-means of a~~ centrifugal force during rotation is possible.

Replace the paragraph beginning at page 10, line 25 with:

~~With reference to claims 3 and 4, since~~Since the eccentricity due to the difference in weight between the printed wiring~~-type~~ air-core coil and the wound~~-type~~ air-core coil can be anticipated, a disc~~-type~~ rotor which can easily generate vibrations by~~-means of a~~ centrifugal force during rotation is possible. Also, since one or two wound~~-type~~ air-core coils suffice, the manufacturing cost can be reduced.

Replace the paragraph beginning at page 10, line 30 with:

~~With reference to claim 5, when~~When the shaft holder and the wound-~~type~~ air-core coil arrangement guides are erected by outsert molding on the wound-~~type~~ air-core coil arrangement guide apertures and the reinforcement holes, resin fills the insertion pass portion so that the wound-~~type~~ air-core coil arrangement guides, the stop walls, and the shaft holder are integrally connected, which improves strength~~thereof~~.

Replace the paragraph beginning at page 11, line 1 with:

~~With reference to claim 6, the~~The shaft holder and the wound-~~type~~ air-core coil arrangement guides can be formed~~at once~~ simultaneously.

Replace the paragraph beginning at page 11, line 3 with:

~~With reference to claims 7 and 8, a~~A disc-~~type~~ rotor generating~~great~~ large vibrations can be obtained due to high specific gravity of tungsten alloy. Since fewer air-core coils are required, the manufacturing cost is reduced.

Replace the paragraph beginning at page 11, line 6 with:

~~With reference to claims 9 and 10, since~~Since the vibrator motor has the above-described rotor, the manufacturing cost is reduced while~~a great amount of~~ large vibrations can be obtained.